Vertex Standard

VX-1700

Operating Manual

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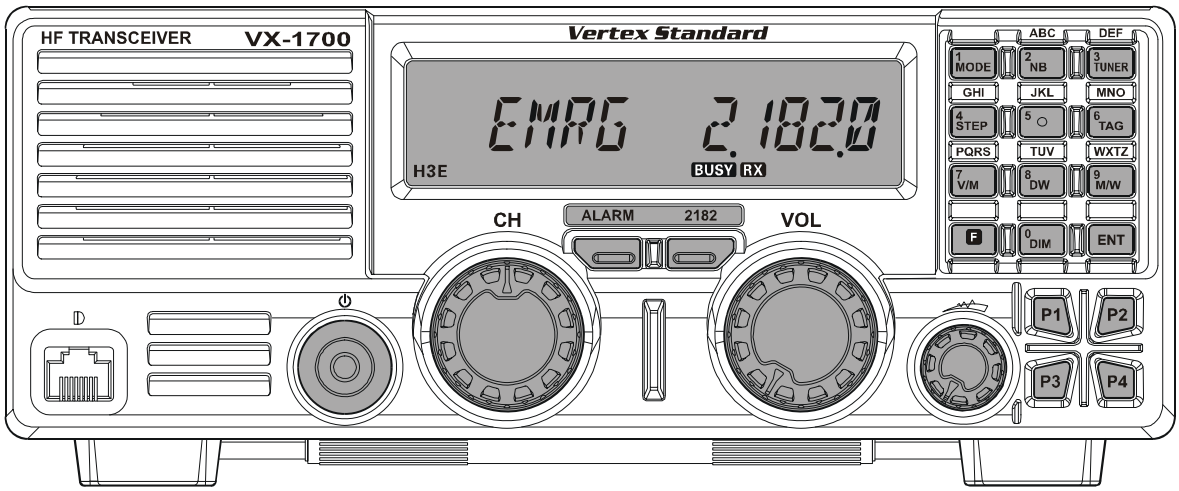
Supplied Accessories

- ❒ MH-31A8J Hand Microphone
- ❒ DC Power Cord T9023725
- ❒ Spare Fuse (25 A Blade Type) Q0000074
- ❒ Switch Label Sheet RA0696400
- ❒ Operation Manual
- ❒ Warranty Card

Available Option

- ❒ **FP-1030A** AC Power Supply
- ❒ **MD-200A8X** Desktop Microphone
- ❒ **FC-30** Antenna Tuner (Coaxial Lines)
- ❒ **FC-40** Antenna Tuner (Wire/Whip Antennas)
- ❒ **ALE-1** Automatic Link Establishment Unit
- ❒ **MLS-100** External Speaker
- ❒ **YA-30** Broadband HF Antenna
- ❒ **YA-007FG** HF Multi-Band Mobile Antenna
- ❒ **MMB-89** One-Touch Mobile Bracket
- ❒ **MHG-1** Carrying Handle
- ❒ **CT-118** Control Cable (for the VL-1000 Linear Amplifier)
- ❒ **CE77Win** PC Programming Software
- ❒ **CT-62** PC Programming Cable



The Vertex Standard **VX-1700** is a low-cost, integrated HF communications transceiver designed for the world-wide Marine, Land Mobile, and Government markets.

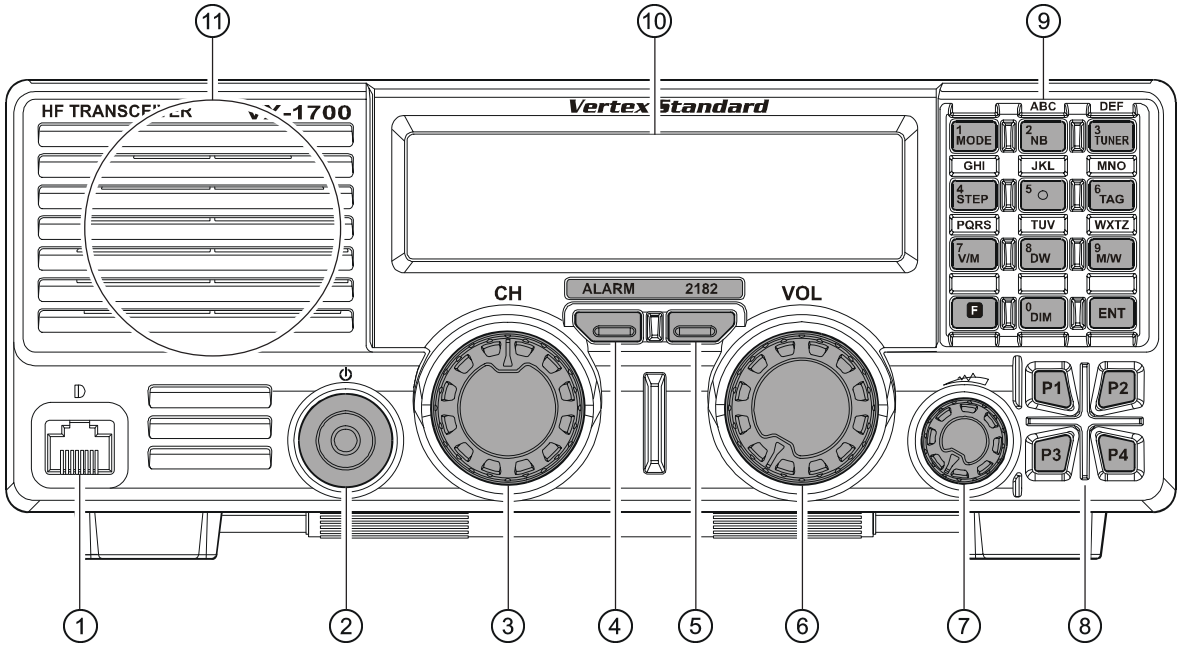
The Vertex Standard **VX-1700** provides continuous receiver coverage from 30 kHz to 29.99999 MHz, and transmitter coverage as appropriate for the user's application. Operating modes provided include J2B (USB or LSB), J3E (USB or LSB), A1A, A3E, and H3E (only on 2182 kHz in the Marine version), making the **VX-1700** ideal for a wide variety of voice, telegraphy, and many data communication applications.

Advanced features of the Vertex Standard **VX-1700** include 200 memory channels (arranged in five banks), keyboard frequency entry with frequency resolution to 10 Hz (100 Hz in Memory mode), and Alpha-Numeric labeling of Memory channels. Ease in programming fleet systems is provided. And the Selcall feature allows paging of a single transceiver or groups of transceivers by a dispatch center.

Available options include the **FP-1030A** AC Power Supply, **FC-30** Automatic External Antenna Tuner (for 50 Ohm unbalanced antenna feedlines), **FC-40** Automatic External Antenna Tuner (for an end-fed random-length wire or long whip antenna), **YA-30** Broadband Dipole Antenna, **YA-007FG** Mobile Antenna, **MD-200A8X** Desk Microphone, **MLS-100** External Speaker, and the **ALE-1** Automatic Link Establishment Unit which automatically selects the channel with the best LQA (Link Quality Analysis) score from the programmed channels.

This manual includes installation, configuration, interfacing, and operating instructions for the Vertex Standard **VX-1700**. We encourage you to read this manual thoroughly before installing or operating this transceiver.

FRONT PANEL CONTROL & SWITCHES



① MIC Jack

This modular jack accepts microphone voice input, as well as scanning and PTT (Push To Talk) control from the microphone. Specified microphone impedance is 500 - 600 Ohms.

② POWER Switch

This is the main on/off switch for the **VX-1700**. Press and hold this switch for one second to toggle the transceiver's power on and off.

③ CH (Channel) Selector Knob

The Channel selector knob selects memory channels, and tunes the VFO at a rate of 30 steps per revolution.

④ ALARM Button

Pressing this button activates the alarm generator, with the alarm tone emanating from the speaker (receiver audio is muted, and no transmission occurs). To *transmit* the alarm tone, press *both* the [**ALARM**] *and* the [**2182**] button (described next).

⑤ 2182 Button

Pressing this button places the **VX-1700** in the "Emergency Channel" mode, with the following results:

(A) The transceiver is instantly set to 2182 kHz in the H3E mode,

(B) The "**EMRG**" notation appears on the LCD display, indicating Emergency Channel Operation.

⑥ VOL Knob

This control adjusts the receiver audio volume from the speaker. Clockwise rotation of this control increases the volume level.

⑦ SQL Knob

This control may be used silence the receiver when no signals are being received. Clockwise rotation of this control cause the receiver to respond only to progressively stronger signals; conversely, counter-clockwise rotation of this control allows progressively weaker signals to be heard.

When a signal or noise breaks through the squelch "threshold," the "**BUSY**" icon on the display will be illuminated.

⑧ P1 - P4 Keys (Programmable Function Keys)

These four keys functions can be customized, via programming by your Vertex Standard dealer. The factory defaults are shown below.

P1 Key: Press this key to tune the receiver frequency downward without changing the transmit frequency (Clarifier function).

P2 Key: Toggles the Key Lockout feature "on" and "off."

P3 Key: Press this key to tune the receiver frequency upward without changing the transmit frequency (Clarifier function).

P4 Key: Turns the internal speaker (or external speaker, if used) "on" and "off."

⑨ Keypad

These 12 keys are used for both frequency entry and/or certain operational commands.

⑩ LCD Display

This multi function LCD (Liquid Crystal Display) includes frequency readout or Alpha/Numeric "Tag" labeling of the channel in use, plus a Signal Strength/Power Output meter, and icons which provide visual confirmation of transceiver status.

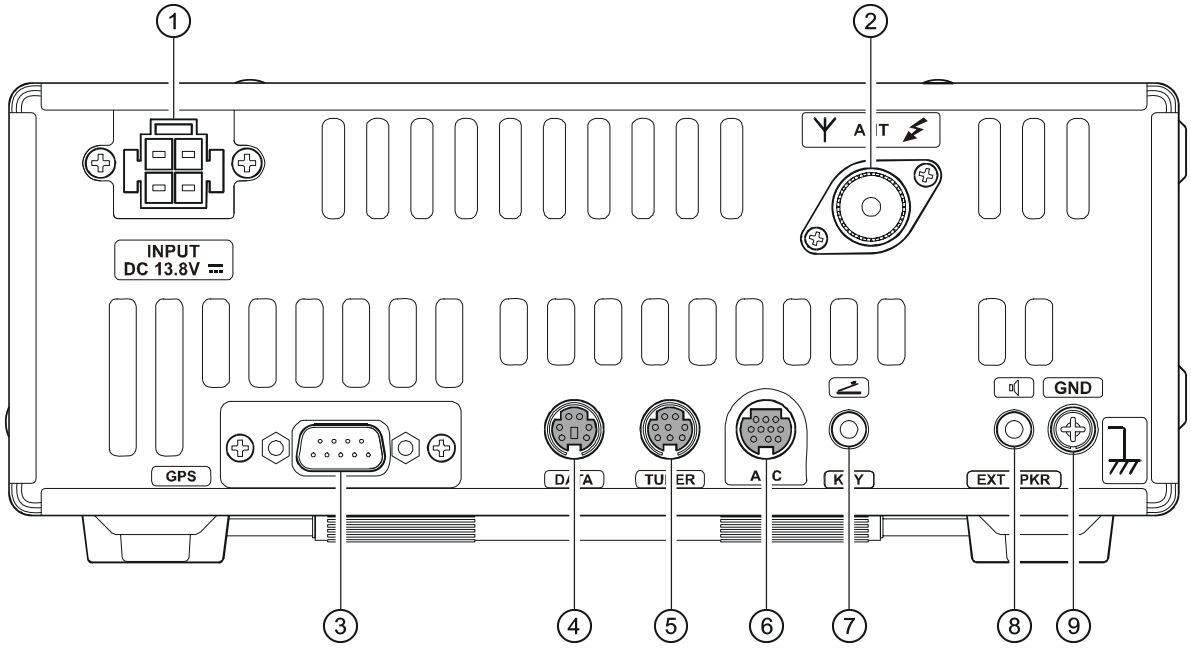
⑪ Speaker

The internal speaker is located here.

KEYPAD FUNCTIONS

Key	Primary Function (Press Key)	Secondary Function (Press F +)
1 MODE	Selects the Operating Mode.	Toggles the IF Bandpass Filter between “WIDE” and “NARROW” in the J2B and A1A modes (only).
2 NB	Toggles the Noise Blanker “on” and “off.”	Toggles the Noise Blanker “on” and “off.”
3 TUNER	Activates the Antenna Tuning Process.	Activates the Antenna Tuning Process to the all Memory Channels in the current Memory Bank.
4 STEP	Changes the synthesizer step in the VFO mode.	Changes the synthesizer step in the VFO mode.
5 ○	None	None
6 TAG	Indicates the memory channel with the channel frequency and channel’s Alpha/numeric Tag alternately when the channel display format is set to the “Alpha/numeric Display” mode.	Indicates the memory channel with the channel frequency and channel’s Alpha/numeric Tag alternately when the channel display format is set to the “Alpha/numeric Display” mode.
7 V/M	Selects the frequency control method among “VFO mode,” “ITU mode,” and “Memory mode.”	Selects the frequency control method among “VFO mode,” “ITU mode,” and “Memory mode.”
8 DW	Activates the “Dual Watch” feature.	Selects the Scan Resume mode.
9 M/W	Activates the “Memory Write” mode (for memory channel storage).	Activates the “Memory Write” mode (for memory channel storage).
0 DIM	Toggles the Display intensity between “High” and “Low.”	Engages the Set (Menu) mode.
ENT	Activates the “Secondary” key function.	Disables the “Secondary” key function.
F	Activetes the “Alternate” key function.	Disables the “Alternate” key function.

REAR PANEL CONNECTIONS



① INPUT (13.8 V)

This is the main DC power input jack for the **VX-1700**.

② ANT Jack

This PL-259 ("M" Type) connector is used for connection of the coaxial feedline from the antenna. When the optional **FC-30** or **FC-40** External Antenna Tuner is used, the RF interconnection cable from the **FC-30** or **FC-40** connects here, while the antenna wire or whip connects to the **FC-30** or **FC-40**.

③ GPS Jack

This 9-pin serial DB-9 jack is for interconnection to a GPS receiver (not supplied) capable of supplying NMEA-0183 data.

④ DATA Jack

This 6-pin mini-DIN jack is for interconnection to a TNC (Terminal Node Controller) or other data transmission/reception modem device (such as a WeatherFax demodulator).

⑤ TUNER Jack

This 8-pin mini-DIN jack is for interconnection to the optional **FC-30** or **FC-40** External Antenna Tuner.

⑥ ACC Jack

This 10-pin mini-DIN jack is for interconnection to the external accessories.

⑦ KEY Jack

This 3.5-mm miniature phone jack accepts a CW (Morse Code) key or output from an electronic CW keyer unit. Key up voltage is + 5.0 V, and key-down current is 1.2 mA.

⑧ EXT SPKR Jack

This 3.5-mm miniature phone jack provides receiver audio output for an external speaker. Available audio output is 2.2 Watts, and the permitted impedance is 4 to 16 Ohms. Inserting a plug into this jack automatically disables the internal speaker.

⑨ GND Terminal Post

Use this terminal to connect the transceiver to a good earth ground bus, for safety and optimum performance. Use a large diameter, short braided cable.

Safety Precautions

Before proceeding with installation of the **VX-1700** transceiver, please read and observe all safety and operating instructions. Consult with qualified installation or service personnel should any questions arise regarding these important safety tips.

Power Connections

The power connector for the **VX-1700** must only be connected to a DC source providing 13.8 Volts DC (±15 %), and capable of at least 20 Amperes of current. Do not connect this apparatus to any other DC voltage, and never connect the DC power cable to an AC source of any kind. Always observe proper polarity when making DC connections. Our Limited Warranty does not cover damage caused by improper power connections.

Note that other manufacturers may use the same type of DC power connector as does your **VX-1700** transceiver, but the wiring configuration of the other manufacturer's plug may be different from that specified for your transceiver. Serious damage can be caused if improper DC connections are made; consult with a qualified service technician when in doubt.

Grounding for Electrical Safety

Connect the rear panel ground lug to a good earth ground. For best performance, such a ground should consist of one or more ground rods 2.6 m (8 feet) long, connected to the transceiver via a low-inductance cable such as a heavy braided wire (the shield from surplus/discarded RG-213 type cable is ideal). The lead-in cable should be as short as possible.

Do not use gas lines as a ground connection!

Electrical Shock Prevention

Be certain that all station wiring is properly insulated so as to prevent short-circuits which could damage this transceiver and/or accessories connected to it. Be sure to protect power cables from damage due to abrasion by ensuring that they cannot be walked upon nor crushed under rolling chairs, etc. Never route power cables near sharp metallic edges which might cut through protective insulation.

Never spill liquids into this transceiver, and do not drop metallic objects into the transceiver enclosure. Electrical shock may result when you attempt to remove the object.

Unsupervised children should be kept away from any electrical apparatus such as the **VX-1700** Transceiver and its accessories.

Antenna Precautions

Always locate antennas such that they can never come in contact with outdoor power lines in the event of a catastrophic antenna support or power line support structure failure. Ground the support structure adequately, so as to dissipate energy absorbed during a lightning strike. Install appropriate lightning arrestors in the antenna lead-in and rotator cable (if used) according to the arrestor's instructions.

In the event of an approaching electrical storm, disconnect all antenna lead-in, rotator cables, and power cables completely from your station if the storm is not immediately in your area. Do not allow disconnected cables to touch the case of your **VX-1700** transceiver or accessories, as lightning can easily jump from the cable to the circuitry of your transceiver via the case, causing irreparable damage. If a lightning storm is in progress in your immediate area, do not attempt to disconnect the cables, as you could be killed instantly if lightning should strike your antenna structure or a nearby power line.

If a vertical antenna is utilized, be certain that humans and/or pets and farm animals are kept away both from the radiating element (to prevent electrical shock and RF exposure danger) and the ground system, in the event of an electrical storm. The buried radials of a ground-mounted vertical antenna can carry lethal voltages outward from the center of the antenna in the event of a direct lightning strike.

Heat and Ventilation

To ensure long life of the components, be certain to provide adequate ventilation around the cabinet of the **VX-1700**. The cooling system of the transceiver must be free to draw cool air in from the bottom of the transceiver and expel warm air from the rear of the transceiver.

Do not install the transceiver on top of another heat-generating device (such as a linear amplifier), and do not place equipment, books, or papers on top of the transceiver. Place the transceiver on a hard, flat, stable surface. Avoid heating vents and window locations that could expose the transceiver to excessive direct sunlight, especially in hot climates.

Electromagnetic Compatibility and RF Exposure

If this transceiver is used with or in the vicinity of a computer or computer-driven accessories, you may need to experiment with grounding and/or radio frequency interference (RFI) suppression devices (such as ferrite cores) to minimize interference to your communications caused by energy leakage from the computer.

Although there is negligible radio frequency (RF) leakage from the **VX-1700** transceiver itself, its antenna system should be located as far away from humans and animals as practicable, so as to avoid the possibility of shock due to accidental contact with the antenna or excessive long-term exposure to RF energy.

Preliminary Inspection

Inspect the transceiver visually immediately upon opening the packing carton. Confirm that all controls and switches work freely, and inspect the cabinet for any damage. Gently shake the transceiver to verify that no internal components have been shaken loose due to rough handling during shipping.

If any evidence of damage is discovered, document it thoroughly and contact the shipping company (or your local dealer, if the unit was purchased over-the-counter) so as to get instructions regarding the prompt resolution of the damage situation. Be certain to save the shipping carton, especially if there are any punctures or other evidence of damage incurred during shipping; if it is necessary to return the unit for service or replacement, use the original packing materials but put the entire package inside another packing carton, so as to preserve the evidence of shipping damage for insurance purposes.

POWER REQUIREMENTS AND BASIC INSTALLATION

DC Power Connections

The **VX-1700** transceiver is designed for operation from 13.8 Volts DC, negative ground, with the DC source being capable of providing 20 Amperes of continuous current.

For mobile applications, the fused (25-A) DC cable supplied with this transceiver may be used for making the power connections. Be absolutely certain to observe the proper polarity when making power connections:

The ***RED*** DC power lead connects to the ***Positive*** (+) DC terminal; and

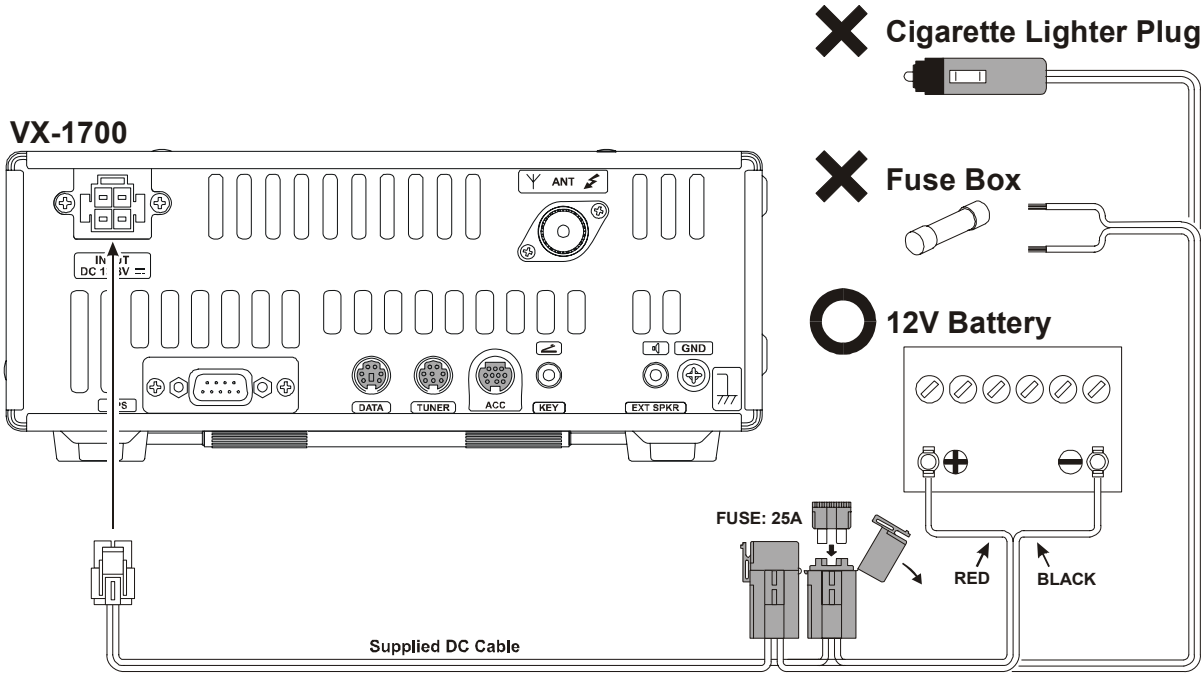
The ***BLACK*** DC power lead connects to the ***Negative*** (–) DC terminal.

To minimize noise pickup, and to provide the best input voltage stability for your transceiver, we recommend you connect the DC cable directly to the vehicle battery, rather than to the ignition or accessory circuitry. Route the DC cable as far away from ignition cables as possible, and cut off any extra cable (from the battery end) to minimize voltage drop. If the DC cable is not long enough, use #12 AWG (minimum) stranded, insulated wire to extend it. Be absolutely certain to solder the connections at the splice securely, and provide ample insulation for the soldered splice (heat shrink tubing plus black electrical tape work well).

Use the following procedure to connect the DC cable:

- ❒ Before connecting the DC cable to the battery, measure the voltage across the battery terminals with the engine running fast enough to show a charge. If the voltage is above 15 Volts, the vehicle's voltage regulator should be adjusted to reduce the charging voltage below 14 Volts.
- ❒ With the radio end of the cable disconnected, connect the ***RED*** cable lead to the ***POSITIVE*** battery terminal, and the ***BLACK*** cable lead to the ***NEGATIVE*** battery terminal. Make certain that the battery terminal connections are tight, and remember to check them periodically for signs of loosening and/or corrosion.
- ❒ Make sure the **POWER** switch on the **VX-1700** transceiver is off, and plug the DC cable into the **INPUT** jack on the rear panel of the transceiver.

CAUTION! In mobile installations, check to ensure that the transceiver **POWER** switch is turned off whenever starting or stopping the engine, to avoid potential damage from switching transients.



MOBILE MOUNTING

The optional **MMB-89** Mobile Mounting Bracket allows quick insertion and removal of the **VX-1700** transceiver from the vehicle. Complete installation instructions are provided with the bracket.

Mobile Antenna Considerations

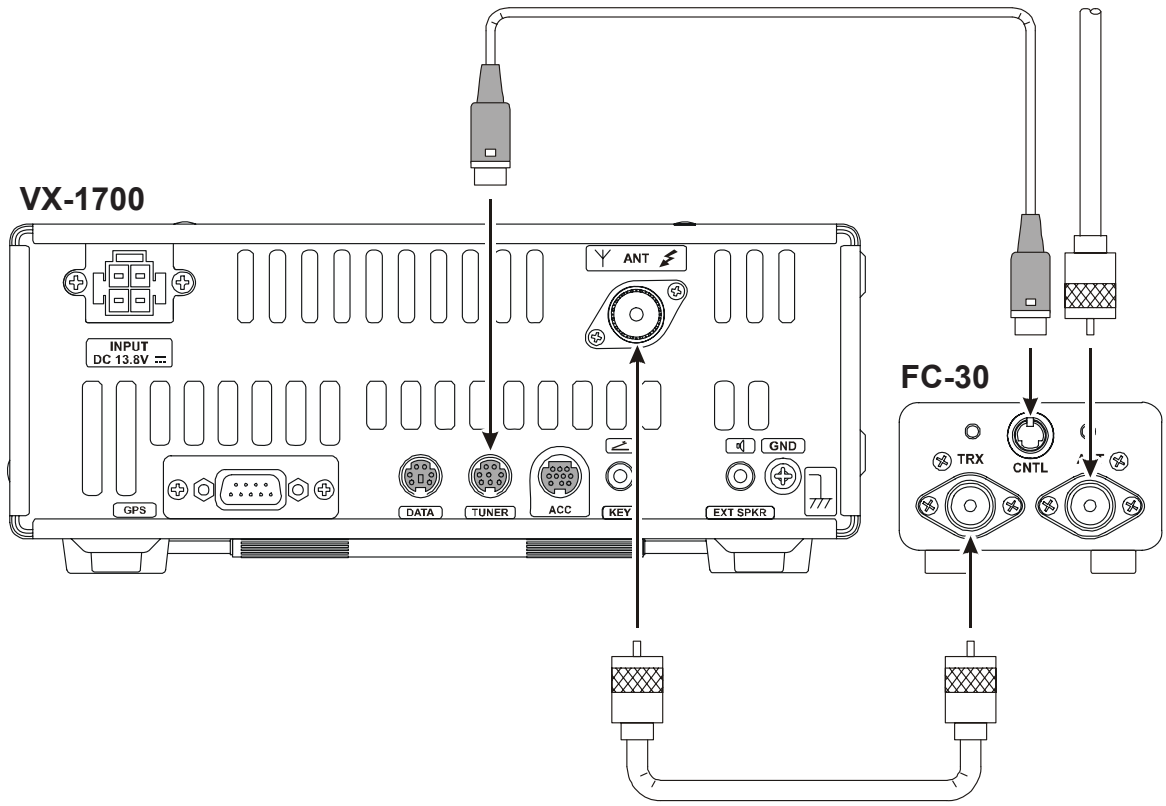
The **VX-1700** transceiver is designed for use with any antenna system providing a 50-Ohm resistive impedance at the desired operating frequency. While minor excursions from the 50-Ohm specification are of no consequence, the power amplifier's protection circuitry will begin to reduce the power output if there is more than a 50% divergence from the specified impedance (less than 25 Ohms or greater than 100 Ohms, corresponding to a Standing Wave Ratio (SWR) of 2.0:1). Compliance with this specification critically depends on the range of frequencies on which operation will take place, and the design of the antenna(s) in use.

If your mobile or marine operation requires wide frequency coverage, the Yaesu **YA-007FG** or similar mobile whip antenna may be used in conjunction with the Yaesu **FC-40** External Antenna Tuner. The **FC-40** is designed to accommodate a wide variety of whip impedances at the operating frequency, converting these to the desired 50 ohm impedance via a sophisticated microprocessor-controlled impedance matching circuit. The **FC-40** and **VX-1700** provide memory of antenna matching settings sufficient for all channels on Memory Bank 1. In marine applications, the **FC-40** is also ideal for the use with a "backstay" antenna or marine mobile whip.

The **FC-40** should be located at or near the base of the antenna, so as to minimize losses and stray radiation. The short lead-in wire from the whip must be securely bonded both to the **FC-40** and the antenna (whip or wire), and the **FC-40** must be securely bonded to the vehicle or vessel ground system, which will act as a counterpoise for the **FC-40** and antenna radiating element. Be sure to weatherproof all outdoor connections thoroughly, especially in maritime environments.

Complete the installation by connecting the RF coaxial cable and **FC-40** control cable as shown in the pictorial below. Complete installation instructions are found in the **FC-40** Instruction Manual; follow the manufacturer's installation instructions when using a whip antenna other than the **YA-007FG**.

For extending the operating frequency range of an antenna fed with coaxial cable, the Yaesu model **FC-30** Antenna Tuner may also be used. The impedance matching range of the **FC-30** is from 17 Ohms to 150 Ohms. Interconnection guidelines may be found in the Operating Manual for the **FC-30**.



MOBILE MOUNTING

Mobile Station Grounding

Although satisfactory grounding in most installations will be achieved via the DC cable's negative lead and the antenna system's coaxial cable shield, it may be necessary, in some installations, to provide a direct ground connection at the mounting location of the transceiver. Due to unexpected resonances which may naturally occur in any location, improper communication system performance may result from insufficient grounding. These symptoms may include: RF feedback (resulting in distortion of your transmitted signal), unintended scanning, blinking or blanking of the frequency display, or loss of memory.

Note that these conditions may occur in any communications installation. The **VX-1700** includes extensive filtering designed to minimize the chance of such problems; however, random currents set up by insufficient RF grounding can nullify such filtering. Bonding the rear panel **GND** terminal of the **VX-1700** transceiver to the vehicle or vessel's ground system should clear up any such difficulties.

Vertex Standard does not recommend the use of "on glass" mobile antennas unless the shield of the coaxial cable is securely grounded near the feedpoint of the antenna. Such antennas frequently are responsible for the ground-related difficulties described above.

BASE STATION INSTALLATION

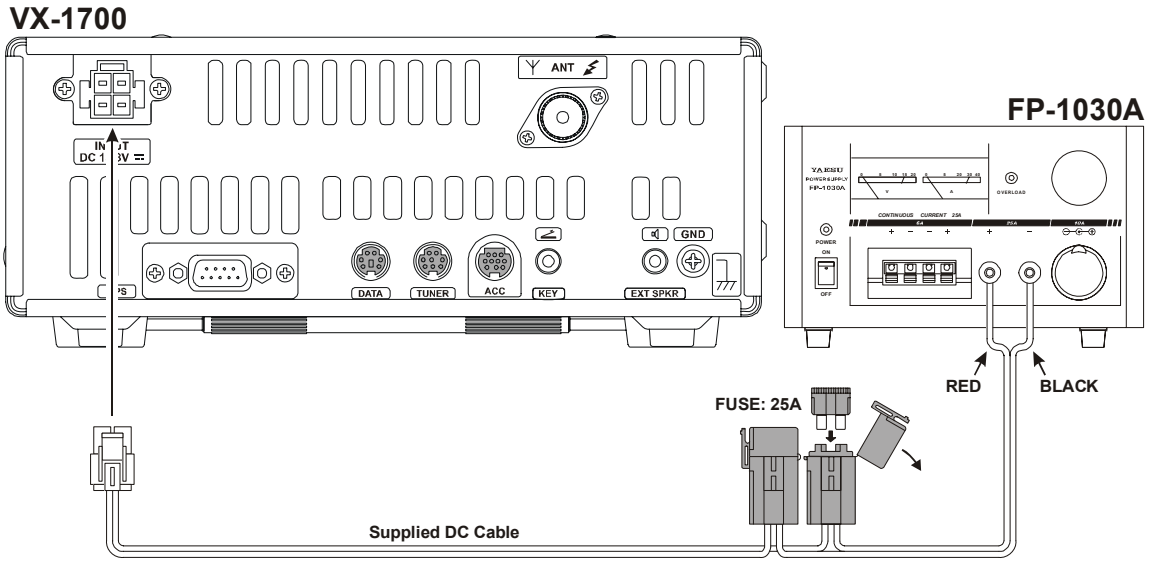
DC Power Connections

For base station installations, Yaesu recommends the use of the Model **FP-1030A** AC Power Supply. The **FP-1030A** provides a regulated 13.8 V DC supply at up to 25-Ampere.

Other models of DC power supplies may be used with the **VX-1700**, but the 13.8 V DC input voltage, 20-Ampere current capability, and DC cable polarity guidelines described previously must be strictly followed.

❒ If you are connecting the **FP-1030A** with the **VX-1700** for the first time, before connecting power check the label in the rear of the **FP-1030A** which indicates the AC mains voltage for which the supply is currently set.

CAUTION! Permanent damage can result if improper supply voltage is applied to this transceiver. Your warranty does not cover damage caused by application of AC, reversed polarity DC, or DC outside of the specified range of 13.8 V ±15%. If using a power supply other than the **FP-1030A**, ensure that the DC supply connector to the transceiver matches the **VX-1700** wiring configuration. Other manufacturers may utilize power supplies with a physically matched connector that is wired differently; this will cause serious damage to the **VX-1700** transceiver!



BASE STATION INSTALLATION

Base Station Antenna Considerations

As with mobile or maritime installations, antenna performance is critical to base station communications system effectiveness. Every effort must be made to ensure that the impedance of the antenna system utilized with the **VX-1700** is as close as practicable to the specified 50-Ohm impedance value, and that mechanical and electrical component integrity are maintained at all times.

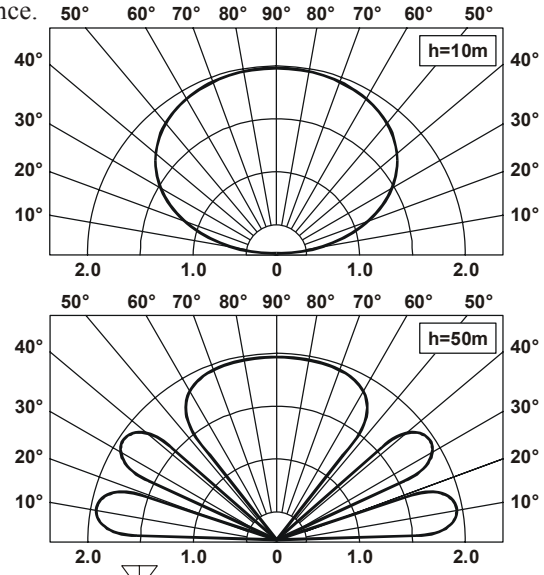
For wide frequency range applications, Vertex Standard's Model **YA-30** Broadband Dipole Antenna may be ideal for your communication requirements. Covering an operating frequency range of 1.8-30 MHz, the **YA-30** eliminates the need for multiple antennas which might otherwise be required for equivalent frequency coverage.

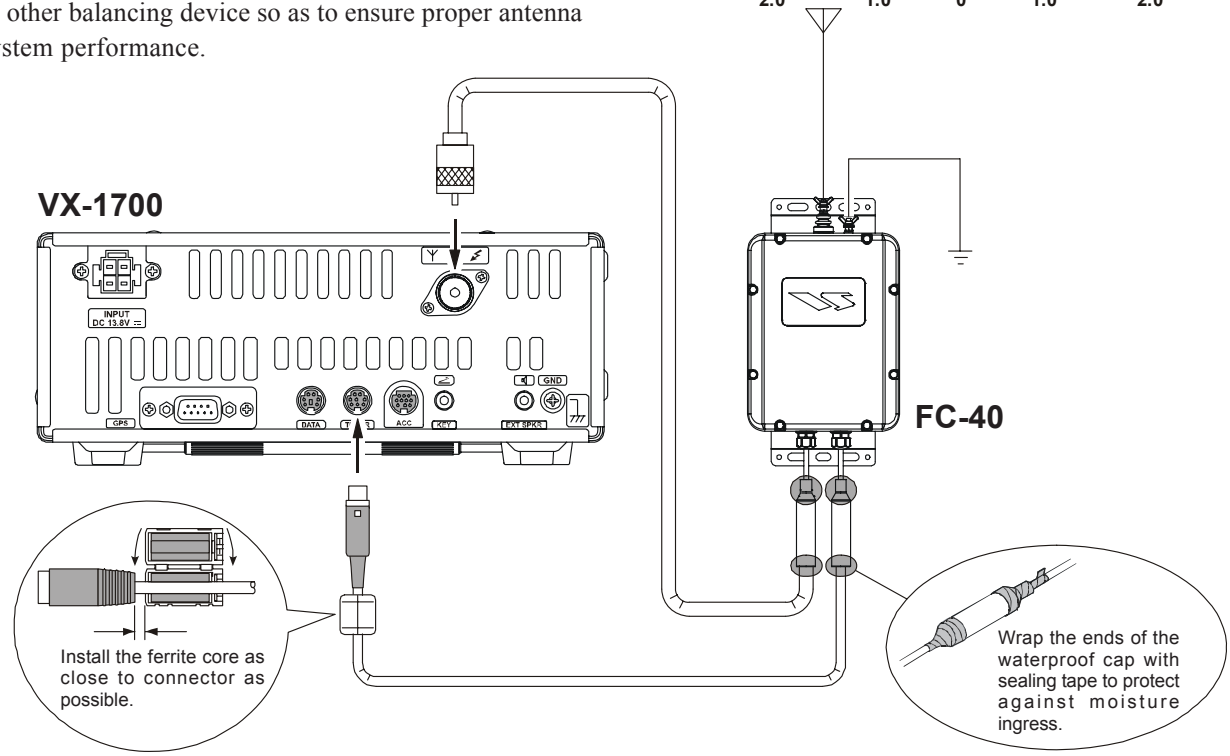
The type of antenna required for a particular communications distance will vary. A complete discussion of this topic is beyond the range of this manual; however, a few general guidelines will be offered herewith.

Any antenna to be installed should be free of nearby obstructions which might interfere with its radiation pattern. The antenna, its support structure, and its cables must never be installed in such a manner that would allow them to contact with power or telephone lines in the event of a catastrophic windstorm or other cause of major failure. An adequate safety is usually provided by keeping the antenna and its support structure 1.5 times the height of the support plus the length of any antenna or guy wires attached to the support.

When installing a balanced antenna such as a dipole, remember that the **VX-1700** transceiver is designed for use with an (unbalanced) coaxial feedline. Always use a balun or other balancing device so as to ensure proper antenna system performance.

Vertical antennas usually provide excellent coverage beyond about 1000 km (600 miles), but very poor coverage at closer distances. Horizontal antennas are frequently better for shorter distances, but they may require a stout support structure such as a tower. The height of the horizontal antenna, and the nature of the ground below it, have a profound impact on the favored launch angle for the main radiation lobe from the antenna at a particular frequency. For example, at 6 MHz a horizontal dipole 10 meters high (33 feet) will provide excellent local coverage out to about 500 km (300 miles); however, at the same frequency the dipole would have to be much higher (perhaps 50 meters or 165 feet) for satisfactory communication over a range of 3000 km (1800 miles). On the other hand, at 26 MHz the same dipole at a height of 10 meters could, ionospheric propagation conditions permitting, be expected to provide outstanding performance over the same 3000 km distance.




VX-1700
FC-40
Install the ferrite core as close to connector as possible.
Wrap the ends of the waterproof cap with sealing tape to protect against moisture ingress.

BASE STATION INSTALLATION

Excellent reference texts and computer software are available for the design and optimization of HF antennas. Your dealer or installer should be able to assist you with all aspects of your antenna installation.

Use high-quality coaxial cable for the lead-in to your **VX-1700** transceiver. All efforts at providing an efficient antenna system will be wasted if poor quality, lossy coaxial cable is used. Losses in coaxial lines increase as the frequency increases, so a coaxial line with 0.5 dB of loss at 6 MHz may have 2 dB of loss at 26 MHz (1 dB is a just-perceptible decrease in signal strength). As a general rule, smaller-diameter coaxial cables tend to have higher losses than larger-diameter cables, although the precise differences depend critically on the cable construction, materials, and the quality of the connectors used on the cable. See the cable manufacturers' specifications for details.

For reference, the chart below shows approximate loss figures for typically-available coaxial cables frequently used in HF installations.

Loss in dB per 30 m (100 ft)
For Selected 50 Ohms Coaxial Cables
(Assumes 50 Ohms Input/Output Terminations)

Cable Type	Loss		
	2 MHz	15 MHz	28 MHz
RG-58A	0.55	1.75	2.60
RG-58 Form	0.54	1.50	2.00
RG-8X	0.39	1.07	1.85
RG-8A, RG-213	0.27	0.85	1.25
RG-8 Form	0.22	0.65	0.88
Belden® 9923	0.18	0.50	0.69
RG-17A	0.08	0.30	0.46

- ❒ Loss figures are approximate; consult cable manufactures' catalog for complete specifications.
- ❒ Loss figures can increase significantly if high SWR is present on the transmission line.

Base Station Grounding

The **VX-1700** HF transceiver, like any other HF communications apparatus, requires an effective ground system for maximum electrical safety and best communications effectiveness. A good ground system can contribute to station efficiency in a number of ways.

- ❒ It can minimize the possibility of electrical shock to the operator.
- ❒ It can minimize RF currents flowing on the shield of the coaxial cable and the chassis of the transceiver which may cause interference to nearby home entertainment devices or laboratory test equipment.
- ❒ It can minimize the possibility of erratic transceiver operation caused by RF feedback or improper current flow through logic devices.

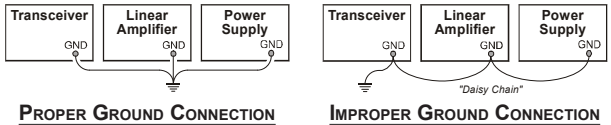
An effective earth ground system may take several forms; for a more complete discussion, see an appropriate RF engineering text. The information presented below is intended only as a guideline.

Typically, the ground connection consists of one or more 2.4m (8') copper-clad steel rods, driven into the ground. If multiple ground rods are used, they should be configured in a "V" configuration, and bonded together at the apex of the V which is nearest the station location. Use a heavy, braided cable (such as the discarded shield from type RG-213 coaxial cable) and strong cable clamps to secure the braided cables to the ground rods. Be sure to weatherproof the connections to ensure many years of reliable service. Use the same type of heavy, braided cable for the connections to the station ground bus (described below).

Inside the station, a common ground bus consisting of a solid copper pipe of at least 25mm (1") diameter should be used. Another ideal ground bus may consist of a wide copper plate (single-sided circuit board material is ideal) secured to the bottom of the operating desk. Grounding connections from individual devices such as transceivers, power supplies, and data communications devices should be made directly to the ground bus using a heavy, braided cable.

Do not make ground connections from one electrical device to another, and thence to the ground bus. This so-called "Daisy Chain" grounding technique may nullify any attempt at effective radio frequency grounding. See the drawings below for examples of proper and improper ground connections.

Inspect the ground system - inside the station as well as outside - on a regular basis so as to ensure maximum performance and safety.



PROPER GROUND CONNECTION — IMPROPER GROUND CONNECTION

NOTE

STARTUP PROCEDURES

- ❒ Be certain that all power supply, antenna, ground, microphone, and other accessory connections have been properly accomplished.
- ❒ Rotate the **VOL** and **SQL** knobs fully counter-clockwise.
- ❒ Turn on the transceiver by press and holding in the **POWER** Switch. The LCD display will become illuminated.

RECEPTION

- ❒ Rotate the **VOL** knob for a comfortable listening level on the incoming signals or noise present on the speaker.
- ❒ When no signal is present on the channel, rotate the **SQL** knob clockwise until the background noise is just silenced. Unless you are responsible for listening for very weak signals (very near the background noise), silencing the receiver using the circuitry is usually preferable in most application.
- ❒ When a signal strong enough to override the squelch threshold is received, the incoming signal will be heard in the speaker, and "**BUSY**" icon will be illuminated. When the incoming signal is disappeared, the "**BUSY**" icon will disappear, although the "**RX**" icon will still be illuminated.
- ❒ When a signal is being received, the S/PO meter will become illuminated according to the incoming signal strength. You may use this S/PO meter reading to compare communications path effectiveness on different channels, or to assist with optimum antenna rotation, if a directional antenna is being used.
- ❒ When receive the impulse noise, such as that from a power line or a vehicle, press the keypad's [**2**(**NB**)] (Noise Blanker) key to reduce the noise level. When the noise blanker is activated, the "**NB**" icon will be illuminated. Press the [**2**(**NB**)] key again to disable the noise blanker.
- ❒ If the station you are listening to should drift or otherwise be unclear (the voice may sound too high-pitched or too low-pitched), pressing the [**P1**] or [**P3**] key may improve the sound of the incoming signal. The [**P1**]/[**P3**] key function does not affect your transmission frequency; only the receive frequency is being adjusted. When the receiving frequency is higher than displayed frequency, the "▲" icon will appear to the right of the frequency display. Similarly, when the receiving frequency is lower than displayed frequency, the "▼" icon will appear to the right of the frequency display. Press and hold in ***both*** [**P1**] and [**P3**] keys for one second to reset the offset.
- ❒ If the LCD display is too bright, press the keypad's [**0**(**DIM**)] key to reduce the display brightness. Press the [**0**(**DIM**)] key again return to the LCD display to nominal brightness level.
- ❒ To turn the internal speaker (or external speaker, if used) off, press the [**P4**] key. Press the [**P4**] key again to restore the speaker audio.

FREQUENCY AND CHANNEL SELECTION

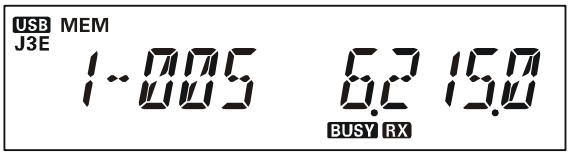
The **VX-1700** includes the following frequency selection capabilities:

- A VFO (Variable Frequency Oscillator) System
- ITU Marine Channel
- Memory Channel
- A one-touch (2.182 MHz) Emergency Channel Memory, which places the transceiver on 2.182 MHz (in transceivers configured for Marine use).

❒ ***In the VFO mode***, the frequency is displayed on the right side, with the operating mode icon being displayed at the left edge of the display. On the left side of the display, the current synthesizer step size is displayed.

❒ ***In the ITU mode***, the frequency and operating mode are displayed as they are during VFO operation; however, the left side of the display indicates the ITU Marine Channel designator.

❒ ***In the Memory Channel Mode***, the memory channel number is displayed on the left side of the display (for example, **1-005**). The digit to the ***left*** of the hyhen is the ***Memory Bank Number***, while the digits to the ***right*** are the ***Channel Numbers*** within that bank. Therefore, in the example below, the display is indicating Channel #5 on Memory Bank #1.



❒ ***In the Emergency Mode***, the frequency "2.182.0" is displayed on the right side, with the special Alpha Tag "**EMRG**."

Frequency and channel selection are very simple on the **VX-1700**:

Select the desired channel grouping (VFO, ITU, and Memory Channel) by repeatedly pressing the keypad's [**7**(**V/M**)] key. The circulation of channel groups is **VFO → Memory Bank 1 → Memory Bank 2 → Memory Bank 3 → Memory Bank 4 → Memory Bank 4 → ITU → VFO ·····**

VFO Mode

❒ Rotate the **CH** Selector knob to select the operating frequency.

❒ If the tuning rate is too slow or too fast, the frequency synthesizer steps may be changed by pressing the keypad's [**4**(**STEP**)] key. Available step sizes are 10 Hz, 100 Hz, and 1 kHz.

❒ The microphone's [**UP**] or [**DWN**] button may also be used to select the operating frequency. Pressing the UP or DWN button momentarily will cause the operating frequency to increment or decrement one step, respectively. Pressing and holding the [**UP**] or [**DWN**] button in for 1/2 second will initiate upward or downward scanning, respectively. Releasing the [**UP**] or [**DWN**] button halts the scan.

❒ The VFO frequency may be entered directly from the keypad.

- Press the keypad's [**ENT**] key momentarily, then enter six digits of the desired operating frequency (the "10s of Hz" digit can not be entered, even if 10 Hz steps are selected; this is a time saving feature). If you make a mistake during frequency entry, rotate the Channel Selector knob so as to cause the erroneous digit of the frequency to blink; now, press the correct number on the key pad, and continue with the remainder of the frequency entry process.
- If you require split-frequency operation (different transmit/receive frequencies), press the [**ENT**] key momentarily, then enter the six digits of the desired transmit frequency; otherwise (to transmit and receive on the same frequency), skip to the next step.
- Press and hold in the [**ENT**] key for 1/2 second to finalize the entry of the VFO frequency (frequencies).

❒ If you need to change the operating mode, press the keypad's [**1**(**MODE**)] key. Available operating modes are J3E(USB), J3E(LSB), J2B (USB), A1A(CW), and A3E(AM).

FREQUENCY AND CHANNEL SELECTION

Memory Channel Mode

❒ Rotate the **CH** Selector knob to select the desired Memory Channel within the selected Memory Bank. Remember that there are a total of five Memory Banks, so if you do not find a particular channel, it may have been stored in a different Memory Bank.

❒ The microphone [**UP**] and [**DWN**] buttons may also be used to select the Memory Channel. Pressing the [**UP**] or [**DWN**] button momentarily will cause the Memory Channel to increment or decrement one step, respectively. Pressing and holding the [**UP**] or [**DWN**] button in for 1/2 second will initiate upward or downward scanning on the Memory Channels, respectively. Releasing the [**UP**] or [**DWN**] button halts the scan.

ITU Marine Channel

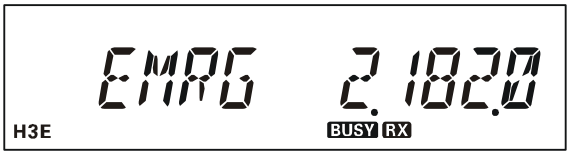
❒ Rotate the **CH** Selector knob to select the desired ITU Memory Channel within the standard ITU Marine Channel Bank provided. The operating mode is automatically selected, and can not be changed.

❒ The microphone [**UP**] and [**DWN**] buttons may also be used to select the ITU Memory Channel. Pressing the [**UP**] or [**DWN**] button momentarily will cause the ITU Memory Channel to increment or decrement one step, respectively. Pressing and holding the [**UP**] or [**DWN**] button in for 1/2 second will initiate upward or downward scanning on the ITU Memory Channels, respectively. Releasing the [**UP**] or [**DWN**] button halts the scan.

2.182 MHz Emergency Channel Mode

A special Emergency Channel feature of the VX-1700 provides several important operational benefits for the owner.

❒ Pressing the [**2182**] button automatically switches the transceiver to the Marine Distress Channel, 2182 kHz (2.182 MHz), and also places the transceiver in the H3E (Single-Sideband AM) mode. On the display, the frequency "2.182.0" will be displayed, as well as a special Alpha Tag "EMRG," designating this as the Emergency Channel.



❒ If desired, the operating mode may be changed to J3E(USB) by pressing the keypad's [**1**(**MODE**)] key.

❒ The [**ALARM**] button may be used for sending a distress signal. To test the alarm, just press the [**ALARM**] button momentarily. After one second, an audible alarm will be heard, although no transmission occurs. Press the [**ALARM**] button again to stop the test alarm.

❒ In an Emergency, press the [**2182**] button while pressing and holding in the [**ALARM**] button. This **VX-1700** will transmit the international marine distress signal (alternating 1300 Hz and 2200 Hz tones) for 35 seconds. Press the [**ALARM**] button (not the [**2182**] button) to cancel the transmitted distress signal.

❒ Press the [**2182**] button again to exit the 2.182 MHz Emergency Channel Mode.

❒ Be certain your operators and crew understand the function of the 2182 Alarm feature, and make sure they understand that it is only to be used in case of a true emergency situation.

Front Panel Locking

To prevent inadvertent changing of the channel frequency or other front panel parameters, press the [**P2**] key on the front panel. All keys, and the Channel Selector knob, will locked out of the operational command capability except for the **POWER** switch, the [**ALARM**] and [**2182**] buttons, and the [**P2**] key itself. The "🔒" icon will appear on the display.

Press the [**P2**] key again to release the front panel to normal operation.

TRANSMISSION

- For Voice transmission, close the **PTT** (Push To Talk) switch on the microphone; the transmitter will now be activated (note that the "TX" icon will be illuminated on the LCD display). Hold the microphone about 1 inch (25 mm) from your mouth, and speak into the front of the microphone in a normal voice level. Release the **PTT** switch to return to the receive mode (the "RX" icon will be again illuminated, and the "TX" icon will go out).
- For CW (Morse Code telegraphy) in the A1A mode, begin sending using your telegraph key or electronic keyer. The **VX-1700** will automatically be placed in the transmit mode when you start to send, and will revert to the receive mode when you stop sending. As you send, a "Sidetone" audio generator allows you to monitor your sending.
- For Data transmission (including Morse Code telegraphy using a TNC (Terminal Node Controller) and keyboard, or similar computer-driven data transmission devices), transmit/receive control is exercised by the software which accompanies the data transmission equipment in use. See the User's Manual for your terminal equipment for operating instructions. Remember to follow the maximum power output guidelines during continuous-duty operation such as RTTY (Radio Teletype) in the J2B mode. Adjust the TX Audio level from the TNC for a maximum of 50 Watts of power output (5 or 6 segments illuminated on the Power Output Bar Graph) if long periods of continuous transmission are anticipated.

Antenna Tuning Procedures

When the optional **FC-30** or **FC-40** External Antenna Tuner is installed, it is activated on each channel automatically.

If the "⊛" icon will appears at the upper right corner on the LCD display while transmitting, the antenna system may require retuning. Use the following procedure.

- Be certain that all connections to the **FC-30**/**-40** have been properly made.
- With the appropriate channel selected via the Main Dial, press the keypad's [**3**(**TUNER**)] key. The "TUNER" icon on the LCD Display will blink, and the **VX-1700** will transmit for a short time. Thereafter, the transceiver will return to the receive mode, and the "TUNER" icon will now be illuminated constantly.
- The **FC-30**/**-40**'s microprocessor-based circuitry includes memory sufficient to retain 100 (for **FC-30**, 200 for **FC-40**) antenna tuning settings in memory. This will greatly reduce frequency change time. If you utilize more than 100 or 200 operating channels that are widely removed in frequency, the new tuning settings will be over-written on a first-in, first-out basis.

DUAL WATCH

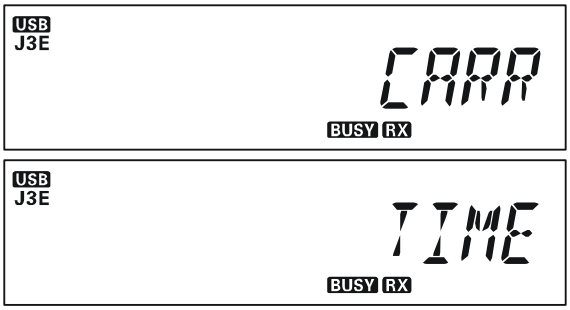
The Dual Watch feature allows the user or dispatcher to operate on one channel while periodically making a brief check of Memory Channel "1-001" (Memory Bank #1, Channel #1). The Dual Watch feature can be engaged so long as there is frequency and mode data written into memory channel "1-001."

Every four seconds, the transceiver will automatically switch over to memory channel "1-001." If a station is transmitting on memory channel "1-001," one of two things will happen:

- If the **VX-1700** is in the "Carrier Drop" mode, the transceiver will hold on memory channel "1-001" until the transmission ceases. The transceiver will continue to hold for ten seconds after the transmission ends, in case the other station decides to resume transmitting. After the three second delay, Dual Watch will resume, with your original operating channel (not memory channel "1-001") being restored to the Main Display.
- If the **VX-1700** is set to the "Time Delay" mode, the transceiver will hold on memory channel "1-001" for five seconds, then Dual watch operation will resume (irrespective of the transmit/receive status of any stations on memory channel "1-001").

Dual Watch operation is simple to use. Follow these steps:

- First, set the desired "Resume" mode for Dual Watch. Usually, this will be "Carrier Drop," which will not allow the transceiver to move off memory channel 1-01 if someone is still transmitting. To do this, press the [**F**] key followed by the [**8**(**DW**)] key, then rotate the **CH** Selector knob until "**CARR**" is shown in the LCD display. If you prefer the "Time Delay" mode, rotate the **CH** Selector knob until "**TIME**" is displayed. Now press the [**8**(**DW**)] key again to return to the normal display.



- Adjust the **SQL** control so that the "**BUSY**" icon disappears and the receiver is silenced.
- Press the [**8**(**DW**)] key to activate Dual Watch. After four seconds, the transceiver will switch over to memory channel "1-001," and will stay there for 1/2 seconds, thereafter returning to your original channel.
- If a call is received on memory channel "1-001" during Dual Watch operation, the transceiver will lock onto that channel, then resume in accordance with the "Resume" mode selected previously.
- Press the [**8**(**DW**)] key again to disable the Dual Watch feature. Operation will revert to your original operating frequency.
- Note that your main operating channel can be changed during Dual Watch operation, but you cannot change channels while memory channel "1-001" is being checked for activity.

ENCRYPTED TRANSMISSION/RECEPTION (REQUIRES AFTER-MARKETING ENCRYPTION MODULE)

- If the transceivers you (and others in your communication group) are using are equipped with the after-market Encryption Module, the Encryption mode may be activated by pressing the [**ENCR**] key. The "ENCRP" icon will become illuminated.
- To de-activate encryption, press the [**ENCR**] key again.
- If the signals of all the other stations in your communications group have a severely distorted or "scrambled" sound, you may have accidentally de-activated your transceiver's encryption mode. Pressing the [**ENCR**] key may allow recovery. However, if only one station in your communications group sounds distorted or "scrambled," it is possible that the encryption mode of that transceiver may have been accidentally turned off. Either the dispatcher or you may advise the other station by switching your encryption off and calling the other station in the non-encrypted mode. Remember that your transmissions will be sent in a non-encrypted format, and will thus not be secure; limit your discussion to a brief advisory regarding the [**ENCR**] key on the other station's transceiver, then revert to encrypted operation immediately by pressing the [**ENCR**] key on your transceiver.

The **VX-1700**'s Selcall feature provides six calling modes:

- **Selcall**
  The Selcall mode allows you to make an individual/group call using the individual ID (Identification) number assigned for each transceiver.
- **Message Call**
  The Message Call mode allows you to send a text message (up to 64 characters of text) to another station.
- **Position Request Call**
  The Position Request Call mode allows you to request the position information of another station.
- **Position Send Call**
  The Position Send Call mode allows you to send your own position information to another station.
- **Beacon Request Call**
  The Beacon Request Call mode allows you to inquire as to the signal quality between your transceiver and another specific transceiver (before making an individual/group call).
- **TelCall**
  The TelCall mode allows you to make a telephone call through a telephone interconnect service provider.

SELCALL

The Selcall mode allows you to make an individual/group call using an individual ID (Identification) assigned to each transceiver in your group or fleet.

Preparation

- ❒ Rotate the **CH** Selector knob to select the channel to be used for Selcall.
- ❒ Disable the VOX and Clarifire features, if necessary.
- ❒ Press the [**SELCALL**] key momentarily to activate the Selcall system. The "**SEL CALL**" icon will be illuminated on the LCD display.

Sending a Selcall

- ❒ Rotate the **CH** Selector knob to select the ID number of the station to be called using Selcall. Available IDs are: the last-received ID, ten pre-programmed IDs, and "Auxiliary," whereby you enter the desired ID using the keypad. To enter the desired ID, rotate the **CH** Selector knob to "**AUX**," press the keypad's [**ENT**] key, then enter the 4-digit ID number from the keypad; finally press the [**ENT**] key again.
- ❒ Press the [**CALL**] key momentarily to enter the Call Menu.
- ❒ Rotate the **CH** Selector knob to select "**SELCALL**."
- ❒ Press the [**CALL**] key again to transmit the Selcall.

Receiving a Selcall

- ❒ When the **VX-1700** receives a Selcall matching your individual ID, a bell alarm will be heard, and the LCD will display the received (calling station's) ID number.
- ❒ Press the **PTT** switch momentarily to cancel the Selcall, then press and hold in the PTT switch and speak into the microphone in the usual fashion to reply to the Selcall.
- ❒ Press the [**SELCALL**] key again to re-activate the Selcall system.

MESSAGE CALL

The Message Call mode allows you to send a text message (up to 64 characters of text) to a specific station.

Preparation

- ❒ Rotate the **CH** Selector knob to select the channel to be used for Message Call.
- ❒ Disable the VOX and Clarifire features, if necessary.
- ❒ Press the [**SELCALL**] key momentarily to activate the Selcall system. The "**SEL CALL**" icon will be illuminated on the LCD display.

Sending a Message Call

- ❒ Rotate the Channel Selector knob to select the ID of the station to which you wish to send the Message Call. Available IDs are: the last-received ID, ten pre-programmed IDs, and "Auxiliary," whereby you may enter the desired ID using the keypad. To enter the desired ID, rotate the **CH** Selector knob to "**AUX**," press the keypad's [**ENT**] key, then enter the 4-digit ID number from the keypad; finally press the [**ENT**] key again.
- ❒ Press the [**CALL**] key momentarily to enter the Call Menu.
- ❒ Rotate the **CH** Selector knob to select "**MESSAGE**."
- ❒ Press the [**CALL**] key again to display the last transmitted message. If you wish to edit the message:
  - ❍ Press the [**ENT**] key again, then press the keypad to select the first digit of the message.
    Example 1: Press the [**1**(**MODE**)] key repeatedly to select the character "**1**" and any of the 27 available characters.
    Example 2: Press the [**2**(**NB**)] key repeatedly to toggle among the available characters associated with that key: **2 → A → B → C → 2 ···**
    Example 3: Press the [**0**(**DIM**)] key to toggle the characters "**0**" and "space."
  - ❍ Rotate the **CH** Selector knob one click clockwise to move the next character.
    If you make a mistake, press the [**1**(**MODE**)] key to back-space the cursor, then re-enter the correct letter, number, or symbol.
  - ❍ Repeat the above steps to program the remaining letters or numbers of the desired message. A total of 64 characters may be used in the message.
  - ❍ Press and hold the [**1**(**MODE**)] key to delete the previously-stored data after the cursor.
  - ❍ Press the keypad's [**ENT**] key to terminate the message.
- ❒ Press the [**CALL**] key again to transmit the Message Call.

Receiving a Message Call

- ❒ When the **VX-1700** receives a Message Call matching your individual ID, a bell alarm will be heard, and the "☑" icon will appear at the top center on the LCD, and the received (called station's) ID number and the message will scroll across the display.
- ❒ Press the **PTT** switch momentarily to cancel the Message Call mode, then press and hold in the **PTT** switch and speak into the microphone in the usual fashion to reply to the Message Call.
- ❒ Press the [**SELCALL**] key again to re-activate the Selcall system.

POSITION REQUEST CALL

The Position Request Call mode allows you to request position information from a specific station.

Preparation

- ❒ Rotate the **CH** Selector knob to select the channel to be used for the Position Request Call.
- ❒ Disable the VOX and Clarifire features, if necessary.
- ❒ Press the [**SELCALL**] key momentarily to activate the Selcall system. The "SEL CALL" icon will be illuminated on the LCD display.

Sending a Position Request Call

- ❒ Rotate the **CH** Selector knob to select the ID of the station from which you wish to receive the position information. Available IDs are: the last-received ID, ten pre-programmed IDs, and "Auxiliary," whereby you may enter the desired ID using the keypad. To enter the desired ID, rotate the **CH** Selector knob to "AUX," press the keypad's [**ENT**] key, then enter the 4-digit ID number from the keypad; finally press the [**ENT**] key again.
- ❒ Press the [**CALL**] key momentarily to enter the Call Menu.
- ❒ Rotate the **CH**Selector knob to select "PoS REQ."
- ❒ Press the [**CALL**] key again to transmit the Position Request Call.

Receiving a Position Request Call

- ❒ When the **VX-1700** receives a Position Request Call matching your individual ID, the LCD will display the received (calling station's) ID number; your radio will transmit your current position (Latitude/Longitude) automatically.
- ❒ Press the **PTT** switch momentarily to cancel the Position Request Call, if desired, press the **PTT** switch and speak into the microphone in the usual fashion while press and holding the **PTT** switch to reply to the Position Request Call.
- ❒ Press the [**SELCALL**] key again to activate the Selcall system.

Note: A suitable GPS receiver capable of supplying NMEA-0183 data must be connected to the rear panel's GPS jack in order to transmit your current position.

POSITION SEND CALL

The Position Send Call mode allows you to send your own position information to the intended ID station.

Note: A suitable GPS receiver capable of supplying NMEA-0183 data must be connected to the rear panel's GPS jack in order to transmit your current position.

Preparation

- ❒ Rotate the **CH** Selector knob to select the channel to be used for the Position Send Call.
- ❒ Disable the VOX and Clarifire features, if necessary.
- ❒ Press the [**SELCALL**] key momentarily to activate the Selcall system. The "SEL CALL" icon will be illuminated on the LCD display.

Sending a Position Send Call

- ❒ Rotate the **CH** Selector knob to select the ID number of the station to which you wish to send your position data. Available IDs are: the last-received ID, ten pre-programmed IDs, and "Auxiliary," whereby you may enter the desired ID using the keypad. To enter the desired ID, rotate the **CH** Selector knob to "AUX," press the keypad's [**ENT**] key then enter the 4-digit ID number from the keypad, finally press the [**ENT**] key again.
- ❒ Press the [**CALL**] key momentarily to enter the Call Menu.
- ❒ Rotate the **CH** Selector knob to select "PoS SND."
- ❒ Press the [**CALL**] key again to transmit the Position Send Call.

Receiving a Position Send Call

- ❒ When the **VX-1700** receives a Position Send Call matching your individual ID, a bell alarm will be heard, and the received (calling station's) ID number, position (Latitude/Longitude), and time will scroll across the LCD.
- ❒ Press the **PTT** switch momentarily to cancel the Position Send Call, then press and hold in the **PTT** switch and speak into the microphone in the usual fashion to reply to the Position Send Call.
- ❒ Press the [**SELCALL**] key again to activate the Selcall system.

BEACON REQUEST CALL

The Beacon Request Call mode allows you to inquire as to the signal quality between your transceiver and another specific transceiver (before placing an individual/group call).

Preparation

- ❒ Rotate the **CH** Selector knob to select the channel to be used for the Beacon Request Call.
- ❒ Disable the VOX and Clarifire features, if necessary.
- ❒ Press the [**SELCALL**] key momentarily to activate the Selcall system. The "SEL CALL" icon will be illuminated on the LCD display.

Sending a Beacon Request Call

- ❒ Rotate the **CH** Selector knob to select the intended ID to be Position Send Call. Available IDs are: the last-received ID, ten pre-programmed IDs, and "Auxiliary," whereby you may enter the desired ID using the keypad. To enter the desired ID, rotate the **CH** Selector knob to "**AUX**," press the keypad's [**ENT**] key then enter the 4-digit ID number from the keypad, finally press the [**ENT**] key again.
- ❒ Press the [**CALL**] key momentarily to enter the Call Menu.
- ❒ Rotate the **CH** Selector knob to select "BCN REQ."
- ❒ Press the [**CALL**] key again to transmit the Beacon Request Call.
- ❒ If the Beacon Request call is successful, the "Answer" signal from the called station will be heard.

TELCALL

The Telcall mode allows you to make a telephone call through a telephone interconnect service provider.

Preparation

- ❒ Rotate the **CH** Selector knob to select the channel for Tel Call.
- ❒ Disable the VOX and Clarifire features, if necessary.
- ❒ Press the [**SELCALL**] key momentarily to activate the Selcall system. The "SEL CALL" icon will be illuminated on the LCD display.

Sending a TelCall

- ❒ Press the [**TELCALL**] key momentarily to enter the TelCall Menu.
- ❒ Rotate the **CH** Selector knob to select the Telephone Number to be used for Telcall. Available numbers are: the last-received number, ten pre-programmed numbers, and "Auxiliary," whereby you may enter the desired Telephone Number using the keypad. To enter the desired Telephone Number, rotate the **CH** Selector knob to "**AUX**," press the keypad's [**ENT**] key, then enter the desired Telephone Number (up to 16 digits) from the keypad; finally press the [**ENT**] key again.
- ❒ Press the [**TELCALL**] key again to transmit the TelCall.
- ❒ When the communication is finished, press the [**TELCALL**] key while holding in the **PTT** switch to send the "Hang-up" signal.

The **VX-1700**'s ALE (Automatic Link Establishment) feature allows you to select the channel with the best LQA (Link Quality Analysis) score from the programmed channels automatically.

Sending an ALE Call

- ❒ Press the [**7**(**V/M**)] key, as needed, to select the Memory Channel mode.
- ❒ Press the [**AEL**] key momentarily to activate the ALE feature. The **VX-1700** will display the last-activated network. After five seconds from the initial pressing of the [**AEL**] key, the **VX-1700** will initiate the ALE scanner.
- ❒ If you wish to change the current ALE network, rotate the **CH** Selector knob to select the desired network.
- ❒ Press the [**CALL**] key momentarily to open the station list.
- ❒ Rotate the **CH** Selector knob to select the station name to which you wish to direct an ALE Call. Available stations are: the last-received station, 100 pre-programmed stations, and ALL CALL, which is a broadcast message which your radio uses to establish a connection with all other stations simultaneously.
- ❒ Press the [**CALL**] key again to transmit the ALE Call.

Sending an ALE Call with an Imbedded Message

- ❒ Press the [**7**(**V/M**)] key, as needed, to select the Memory Channel mode.
- ❒ Press the [**ALE**] key momentarily to activate the ALE feature. The **VX-1700** will display the last-activated network. After five seconds from the initial pressing of the [**ALE**] key, the **VX-1700** will initiate the ALE scanner.
- ❒ If you wish to change the current ALE network, rotate the **CH** Selector knob to select the desired network.
- ❒ Press the [**CALL**] key momentarily to open the station list.
- ❒ Rotate the **CH** Selector knob to select the station name to which you wish to direct the ALE Call. Available stations are: the last-received station, 100 pre-programmed stations, and ALL CALL, which is a broadcast message which your radio uses to establish a connection with all other stations simultaneously.
- ❒ Press the keypad's [**F**] key, then press the [**CALL**] key to display the ten pre-programmed messages.
- ❒ Rotate the **CH** Selector knob to select the desired message. If you wish to edit the message:
  - ❍ Press the [**ENT**] key again, then press the keypad to select the first digit of the message.
    Example 1: Press the [**1**(**MODE**)] key repeatedly to select the character "**1**" and any of the 27 available characters.
    Example 2: Press the [**2**(**NB**)] key repeatedly to toggle among the available characters associated with that key: **2 → A → B → C → 2 ···**
    Example 3: Press the [**0**(**DIM**)] key to toggle the characters "**0**" and "space."
  - ❍ Rotate the **CH** Selector knob one click clockwise to move the next character.
    If you make a mistake, press the [**1**(**MODE**)] key to back-space the cursor, then re-enter the correct letter, number, or symbol.
  - ❍ Repeat the above steps to program the remaining letters or numbers of the desired message. A total of 90 characters may be used in the message.
  - ❍ Press and hold the [**1**(**MODE**)] key to delete the previously-stored data after the cursor.
  - ❍ Press the keypad's [**ENT**] key to terminate the message.

  If you select the "None" option, you may send just the ALE Call instead of the ALE Call with the imbedded message.
- ❒ Press the [**CALL**] key again to transmit the ALE Call with the imbedded message.

- ❒ Press the [**7**(**V/M**)] key, as needed, to select the Memory Channel mode.
- ❒ Press the [**9**(**M/W**)] key; on the LCD, you will see a blinking memory channel number.
- ❒ Rotate the **CH** Selector knob to select the Memory channel onto which you wish to store new frequency information. If you select a channel on which data is already stored, entering new data will cause you to overwrite the data previously stored.
- ❒ Press the keypad's [**ENT**] key, then enter six digits of the desired operating frequency (the "10s of Hz digit" can not be entered, even if 10 Hz steps are selected, as frequency resolution during memory operation is to the nearest 100 Hz step). If you make a mistake during frequency entry, rotate the **CH** Selector knob so as to cause the erroneous digit of the frequency to blink; now, press the correct number on the key pad, and continue with the remainder of the frequency entry process.
- ❒ Press the [**ENT**] key momentarily, then press the keypad's [**1**(**MODE**)] key to select the desired operating mode. Available operating modes are J3E(USB), J3E(LSB), J2B(USB/LSB), A1A(CW), and A3E(AM).
- ❒ Press the [**ENT**] key momentarily. If your radio assign the CLAR (+)/CLAR(–) functions to the Programmable Function (**P1** ~ **P4**) Keys, set the clarifier offset frequency by pressing the to the [**CLAR**(+)]/[**CLAR**(–)] key. Otherwise, skip to the next step.
- ❒ Press the [**ENT**] key momentarily, then enter six digits of the desired transmit frequency (only if you wish to store independent transmit and receive frequencies on the same channel). Otherwise, skip to the next step.
- ❒ If you wish to append an Alpha/numeric "Tag" to this channel, press the [**ENT**] key momentarily, then enter the desired name "Tag" using the **CH** Selector knob and keypad. Otherwise, skip to the next step.
  - ❍ Rotate the **CH** Selector knob to select the first digit of the label.
  - ❍ Press the keypad to select the desired character.
    Example 1: Press the [**1**(**MODE**)] key repeatedly to select the character "**1**" and any of the 27 available characters.
    Example 2: Press the [**2**(**NB**)] key repeatedly to toggle among the available characters associated with that key: **2 → A → B → C → 2 ···**
    Example 3: Press the [**0**(**DIM**)] key to toggle the characters "**0**" and "space."
  - ❒ Press the [**ENT**] key momentarily to lock the frequencies, mode, and "Tag" into the memory.

PROGRAMMABLE FUNCTION (PF) KEYS

The **VX-1700** includes four Programmable Function (**P1** ~ **P4**) Keys. The Programmable Function button functions can be customized, via programming by your VERTEX STANDARD dealer, to meet your communications/ network requirements. Some features may require the purchase and installation of optional internal accessories. The possible Programmable Function button programming features are illustrated below, and these functions are explained follow.

For further details, contact your VERTEX STANDARD dealer. For future reference, check the box next to the function that has been assigned to each Programmable Function button on your particular radio, and keep it handy.

FUNCTION	P1	P2	P3	P4
CH 1				
CH 2				
CH 3				
CH 4				
1 MHz UP				
1 MHz Down				
CLAR (+)				
CLAR (–)				
DW				
ENCRIPTION				
LOCK				
PRI				
SCAN				
SPKR OFF				
RF PWR SEL				
VOX				
ALE				
CALL				
MONI				
RCV MSG				
SELCALL				
TEL				
AUX TOGGLE				
AUX PRS TO H				
AUX PRS TO L				

CH 1 - CH 4

Press the assigned programmable key to recall the Dealer pre-programmed channel directly while operating in the Memory Channel mode.

1 MHz UP

Press the assigned programmable key to tune the VFO frequency upward in 1 MHz steps while operating in the VFO mode.

1 MHz Down

Press the assigned programmable key to tune the VFO frequency downward in 1 MHz steps while operating in the VFO mode.

CLAR (+)

Press the assigned programmable key to tune the receiver frequency upward without changing the transmit frequency (Clarifier function).

CLAR (–)

Press the assigned programmable key to tune the receiver frequency downward without changing the transmit frequency (Clarifier function).

DW

Press the assigned programmable key to activate the Dual Watch feature.

ENCRYPTION

Press the assigned programmable key to toggle the Encryption feature “on” and “off.”

LOCK

Press the assigned programmable key to toggle the Key Lockout feature “on” and “off.”
The “” icon will appear on the display when the Key Lockout feature is activated.

PRI

Press the assigned programmable key to activate the Priority Scan.

SCAN

Press the assigned programmable key to activate scanning.

SPKR OFF

Press the assigned programmable key to turn the internal speaker (or external speaker, if used) “on” and “off.”
The “” icon will appear on the display when the speaker is set to “on.”

RF PWR SEL

Press the assigned programmable key to select the transmit power output level (“Low,” “Medium,” and “High”).
The “*Low*” icon will appear at the bottom of the display while operating on the “Low Power” and “Medium Power” settings.

VOX

Press the assigned programmable key to toggle the VOX feature "on" and "off."
The "VOX" icon will appear on the display when the VOX feature is activated.

ALE

Press the assigned programmable key to toggle the ALE (Automatic Link Establishment) feature "on" and "off."

CALL

Press the assigned programmable key to transmit a Selcall (or ALE) while operating in the Selcall (or ALE) mode.

MONI

Press the assigned programmable key to disable the noise squelch action (hear background noise); the "BUSY" icon will appear in the LCD. Press again this key to activate the noise squelch (quiet the noise).

RCV MSG

Press the assigned programmable key to recall the last-received Selcall or ALE Message.

SELCALL

Press the assigned programmable key to toggle the SELCALL feature "on" and "off."

TELCALL

Press the assigned programmable key to transmit a Telcall while operating in the Selcall.

AUX TOGGLE

Press the assigned programmable key to toggle the optional accessory port "3" "on" and "off."

AUX PRS TO H

Press the assigned programmable key to turn the optional accessory port "2" to "High."

AUX PRS TO L

Press the assigned programmable key to turn the optional accessory port "1" to "Low."

NOTE

Part 15.21: Changes or modifications to this device not expressly approved by Vertex Standard could void the user's authorization to operate this device.

Vertex Standard

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